UNION CARBIDE CORPORATION
NUCLEAR DIVISION
P. O. BOX P, OAK RIDGE, TENNESSEE 37830

January 25, 1974

United States Atomic Energy Commission
Attention: Mr. C. A. Keller, Director
Uranium Enrichment Operations Division
Post Office Box E
Oak Ridge, Tennessee 37830

Gentlemen:

Environmental Assessment - ORGDP Classified Burial Ground

Enclosed is the environmental assessment for the proposed classified burial ground at the Oak Ridge Gaseous Diffusion Plant.

We request approval of this project, with respect to environmental considerations, as soon as possible. If you require additional information concerning this project, please contact S. S. Stief, ORGDP Environmental Protection Coordinator, Extension 3-3224.

Very truly yours,

R. A. Winkel

R. A. Winkel, Superintendent
Oak Ridge Gaseous Diffusion Plant

RAW:mj

Enclosure

cc: Mr. G. R. Jasny
Mr. R. G. Jordan
Mr. W. L. Richardson
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Mr. S. S. Stief
Mr. P. R. Vanstrum
Mr. W. J. Wilcox, Jr.

APPROVAL FOR RELEASE

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Approval for unrestricted release of this document is authorized by the Oak Ridge K-25 Site Classification and Information Control Office, Martin Marietta Energy Systems, Inc., PO Box 2003, Oak Ridge, TN 37831-7307.

Irwin S. Stief 1/26/43

K-25 Classification & Information Control Officer Date

ENVIRONMENTAL ASSESSMENT

CLASSIFIED BURIAL GROUND

for the

OAK RIDGE GASEOUS DIFFUSION PLANT

Prepared By:

Environmental Protection Group

Oak Ridge Gaseous Diffusion Plant

January 21, 1974

I. PROPOSED ACTION AND ANTICIPATED BENEFITS

A. Description of the Project

The proposed new classified burial ground will provide space for the onsite burial of classified waste or material generated at the Oak Ridge Gaseous Diffusion Plant (ORGDP). Present plans call for the burial ground to be located on a weeded and wooded area between the K-1037 Building and the centrifuge development area (Figure 1). A 22-acre site will be fenced and the proper security lighting and patrol road will be constructed. An underground natural gas line divides the site into two portions of 5 and 17 acres. Guard-rail barriers will be constructed 50 feet from each side of the gas line. Security gates will be located at the points where the gas line intersects with the fence so that the gas company can perform any necessary maintenance on the line.

The elevation of the site is 840 to 880 feet as compared to elevations of 760 - 785 feet for the plant area and 740 feet for the water level in Poplar Creek. The subsurface of the site is made up of clay, siltstone, shale, and thin layers of limestone. The surface waters from the site drain either to Poplar Creek at a location just below Blair Bridge or to the K-1007-B lake. There are some short "hollows" located on the perimeter of the site. Burial will be avoided near these locations.

The material to be buried originates predominately from three areas: (1) the gaseous diffusion process buildings, (2) the barrier manufacturing buildings, and (3) the centrifuge development buildings. In most cases, the material is classified due either to the materials of construction or the actual physical shape.

Initial burial will begin in a cleared area approximately 1 - 2 acres in size and located near the center of the 17-acre portion. The waste material will be placed in trenches 15-feet deep and 100-feet long. Dirt will be used to cover the material when burial in the trench is completed. At this time, another trench will be excavated.

Although this will be a classified burial ground, some of the material may have unavoidable contamination on its surface. In order to determine if leaching of contaminates is occurring, a "wet-well" will always be constructed downgrade of the trenches. Water samples (if there is any water present) will be periodically taken from the wet-well and analyzed for various chemical parameters. As mentioned previously, the surface waters will flow either to the K-1007-B lake or Poplar Creek. In doing so, the water flows through locations at which routine water samples are taken. Continuous sampling is performed at the effluent of K-1007-B lake. Grab sampling is performed on a water stream, which would contain any surface water <u>not</u> going to K-1007-B, just before it enters Poplar Creek. A continuous sampling program will be initiated at this location in early 1974. Any contamination of the surface water should be detectable when the water samples are analyzed.

DWG. NO. G-74-54

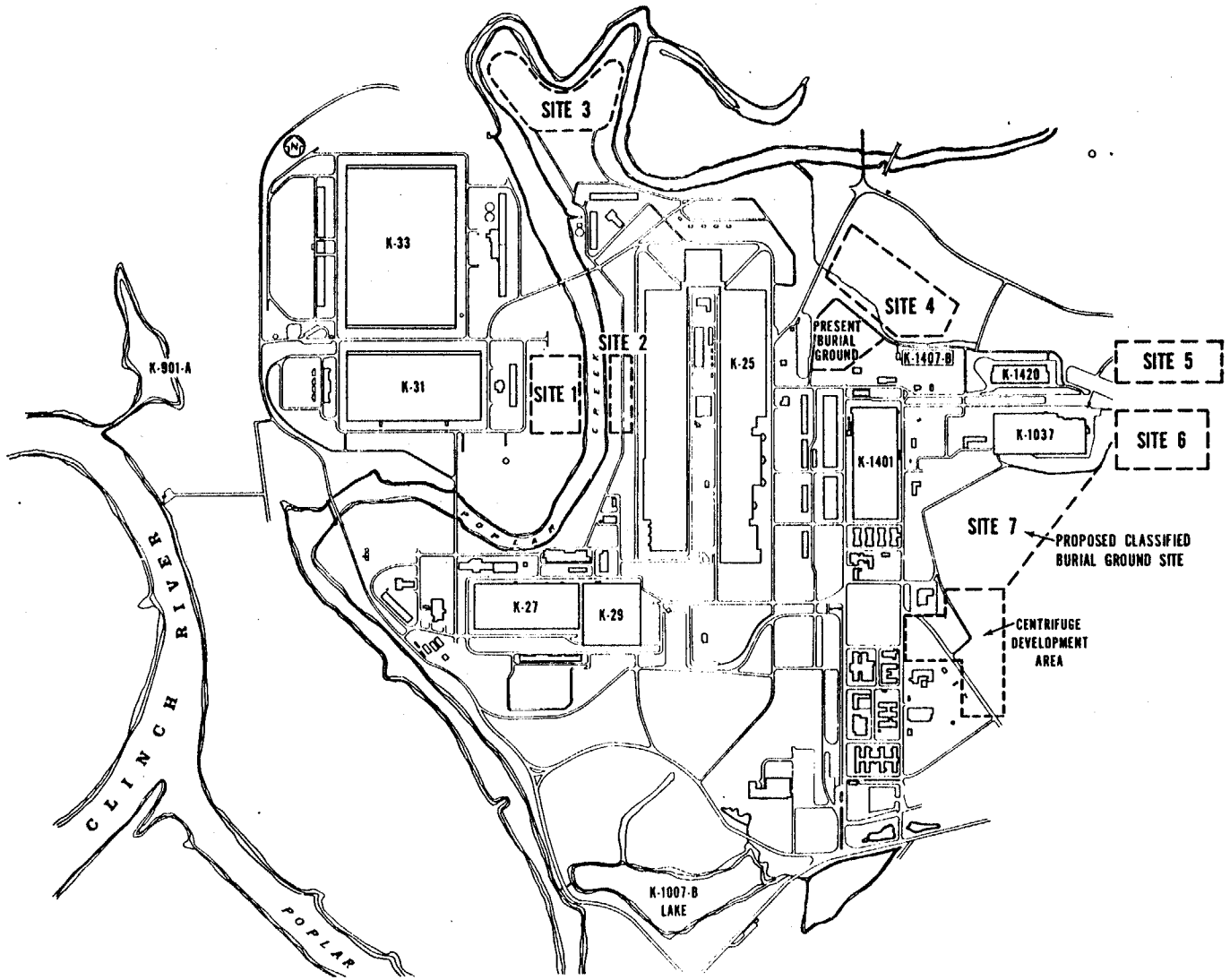

Figure 1
ORGDP SITE MAP

The construction of the classified burial ground is a 1974 GPP, and the work will be performed under lump-sum contract. The cost of the proposed project is $47,000.

B. Anticipated Benefits of the Project

The present classified burial ground is a three-acre site located west - northwest of the K-1407-B Holding Pond and has been in use for 29 years. Almost no space exists at the site for future burial usage. A significant increase in the volume of classified waste is expected in the near future, especially waste generation associated with the CIP, CUP, and Centrifuge Programs. It is projected that the proposed new classified burial ground will be adequate for a minimum of 15 years and, in fact, should serve for a longer period of time.

II. ENVIRONMENTAL IMPACTS

A. Impacts of Construction

Site preparation for the new classified burial ground will involve the construction of a security fence, corridor, and patrol road along two sides of the area; the construction of an initial burial trench approximately 15' deep by 15' wide by 100' long; an access road to the burial trench; and a guard-rail barrier for the natural gas line. The corridor for the natural gas line is presently cleared of trees and undergrowth. Approximately 2.5 acres of land covered with weeds or trees will be despoiled by the construction of the patrol area. Possibly another one acre of weeded land will be despoiled by the access road to the burial trench. However, since the above-mentioned land is within the confines of the existing ORGDP, the total terrestrial impact will be insignificant. The silt content of runoff from this area resulting from heavy rains will be slightly increased during the construction period. The effects on the receiving waters of Poplar Creek should be insignificant.

B. Impacts of Operation

The operation of the classified burial ground should be "clean" with respect to liquid and gaseous discharges to the environment. Surface water runoff from the general area of the burial site would be the only liquid discharge. Leaching of water through the buried material and through the subsurface to the environs is not expected to occur due to the nature of the geology of the subsurface.

No gaseous discharges are expected with the exception of small amounts of dust and exhaust emissions from the operation of one to three pieces of heavy equipment. Due to the very small amount of the emissions and the distance of approximately 0.36 mile from the nearest public highway, the impact from the emissions upon the environment is considered insignificant.

The only utilities requirement for the burial ground area will be the electrical energy for the security lighting and lighting in the immediate area of the burial trenches. However, there should be no net increase in the use of electrical energy associated with the new burial ground since portions of the present security lighting system will no longer be required. Therefore, there should be no increase in the atmospheric emissions from the power stations generating this energy.

C. Unavoidable Adverse Impacts

Although predicted to be insignificant, certain of the previously described impacts of the classified burial ground project are unavoidable. These include:

1. The immediate displacement of approximately 3.5 acres of weeded and wooded land by an access road to the burial site and by the security corridor and patrol road.

2. The eventual commitment of approximately 12 acres (actual space used for burial purposes) of weeded and wooded land.

3. The small, short-term discharges, through runoff, of silt to Poplar Creek.

4. The small amounts of gaseous emissions from dust and exhaust gases resulting from the operation of heavy equipment.

III. ALTERNATIVES

Basically, there are two alternatives to the classified burial ground project: total abandonment, and the selection of a burial site different from the present proposed site. If the project is abandoned, burial activities would have to continue at the present classified burial ground. This is not a feasible alternative since burial at the present site is becoming more difficult daily, due to the fact that sufficient spaces for proper burial are rapidly decreasing. If burial is continued at the site, "mounds" may develop and proper landscaping cannot be done.

One of the main criteria for the burial ground site was that it be located on AEC property and was within the boundary of Blair Road, Highway 58, Contractor Road, West Perimeter Road, and North Perimeter Road. Sites within the boundary could be included in the routinely security-patrolled area by extending or rerouting the present security perimeter fencing, patrol road and lighting. To be located outside of this boundary, the burial site would have to be considered a separate security area. This would include a security fence, lighting and a guard portal. Due to security considerations, a guard would have control access and egress at the burial site. This situation would cause considerable operating problems and unnecessary expense.

Other considerations in choosing a site are the acreage available for burial purposes and the location of the acreage relative to the source of the classified material. The majority of the material originates at the K-1037 Building, the four main process buildings, and the centrifuge development area. However, a large portion of the material goes through decontamination processes at the K-1420 Building located on the extreme east side of the ORGDP. Essentially, this means that a large percentage of this material will ultimately be located on the east side of the plant when it is ready for burial.

In looking at the ORGDP, several locations can be found that contain sufficient acreage for a classified burial ground. However, most of the locations have the mutual disadvantage of having a water table that is fairly close to the surface of the ground. This is particularly true in the case of sites 1 through 5 (See Figure 1). As mentioned previously, a low water table is desirable for burial ground areas so that leaching of material does not occur.

There are other disadvantages associated with sites 1 through 5. Within site 1, there are drain lines from the storm sewers and cooling tower area going to Poplar Creek. There is a possibility of plant expansion at site 2. A salvage yard and material storage area are located in portions of site 3. Also, site 3 was completely under water during the recent heavy rains. Water or swampy spots are located in some places at sites 4 and 5. In addition, a retention basin is located at site 4.

Site 6, which lies east of the K-1037 Barrier Plant, at first seems to be an acceptable location for a classified burial ground. However, two disadvantages exist for this site. There is a possibility that the K-1037 Building may expand east of its present location in order to have increased production capabilities. The expansion would exclude portions of site 6. The second disadvantage is related to the conceptual design of a centrifuge uranium enrichment complex located southeast of the ORGDP. This area appears to be the best site for such a complex if it is located at Oak Ridge.

Rail tracks would be extended to the site so that construction and raw materials can be brought to the centrifuge complex. The most convenient route for the tracks appears to be from the northeast corner of the ORGDP, coming behind and around the east side of K-1037 and then over to the centrifuge complex. Therefore, the rail tracks would go through site 6. Further complications at site 6 may be brought about by the erection of construction warehouses and workshops for the centrifuge complex. Again it appears that a desirable site for such buildings would be in the vicinity of site 6.

Site 7 is the proposed location for the new classified burial ground at the ORGDP. As mentioned previously, its water table level, subsurface geology, and geological location are suitable for burial purposes.

Another alternative, which is actually an alternative in the operating procedure of the burial activities, would be to utilize volume-reduction practices at the new classified burial ground. Volume-reduction is usually performed either by incineration or by compaction. Incineration has been considered as a supplement to the burial procedure. However, there are two disadvantages to the incineration of the classified waste material: (1) a large portion of the waste is metal, and (2) the ORGDP does not have an incinerator which could be used at the burial site. A special incinerator would have to be purchased.

The compaction of the waste material would be difficult because, again, a large portion of the material is metal. During the CIP and CUP programs, much of the metal waste will be of such form and shape that further compaction would be impossible.

Therefore, at this time, incineration and compaction are not considered to be feasible alternatives.

IV. RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The classified burial ground project will have a minimal adverse effect on the long-term productivity of the environment. Any discharges from the area will result in insignificant increases in the environmental levels of uranium and other elements and chemicals. The burial of classified waste material constitutes a commitment of a relatively small land area which, if the need arose, could be recovered through transfer of the material to a different, acceptable site.

The waste to be buried will be material, items, or equipment which may be classified due to its physical shape or characteristics, or to chemical composition. It is essential to the national security and maintenance of technological superiority that certain of these properties are kept under strict security control and surveillance. The proposed classified burial ground will provide such a location.

As mentioned previously, the burial activities will increase significantly with the execution of the expansion programs (CIP and CUP) at the ORGDP and with the expanded centrifuge development programs. The new burial ground will provide sufficient area to properly bury classified material generated at the ORGDP for a minimum of 15 years, and should, in fact, serve for a longer time period.

V. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The major resource to be irreversibly and irretrievably committed by the classified burial ground project is the land area required for the actual burial of the waste material. This is estimated to be a maximum of 12 acres during a 15-year period. This acreage may be reduced considerably if recovery of certain metals is initiated. The utilization of fossil fuels for the generation of electricity for the security lighting and for fuel for the operation of heavy equipment is also a commitment of resources.

VI. CONFLICTS WITH KNOWN STATE, REGIONAL OR LOCAL PLANS OR PROGRAMS

The proposed classified burial ground will not be in direct conflict with any known state, regional, or local plans or programs. The dust or exhaust emissions created by heavy equipment would be of such low magnitude that it is doubtful that these emissions could be detectable by ambient air sampling. Leaching of material into water streams is not expected to occur due to the geology of the subsurface structure and, therefore, no problem is foreseen with respect to water regulations. Also, the regulations relating to the security aspects of a classified area will be initiated fully.

VII. COST-BENEFIT ANALYSIS

The capital cost of the classified burial ground project is estimated to be $47,000. There will be no monetary return from operation of the project that will offset the capital cost. The environmental cost includes the commitment of approximately 12 acres of wooded and weeded terrain.

The classified burial ground will be used as a burial area for classified waste. The waste will be material, items, or equipment which may be classified due to its physical shape or characteristics, or to chemical composition. Therefore, the benefit of the burial ground is the maintenance of the National security and technological superiority of the United States by assuring that certain properties of the classified waste mentioned above are kept under strict security control and surveillance.

It is therefore concluded that the benefits outweigh the economic and environmental cost which this project must incur.